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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/359,523	07/23/1999	TINKU ACHARYA	INTL-0237-US	2927

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EXAMINER

WU, DOROTHY

ART UNIT

PAPER NUMBER

2697

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/359,523

Applicant(s)

ACHARYA ET AL.

Examiner

Dorothy Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings are required in this application because of the reasons cited on the Notice of Draftsperson's Patent Drawing Review, Form PTO 948. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 3, 8, 9, 10, 15-18 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Takakura, U.S. Patent 6,421,083.

Regarding claim 1, Takakura teaches a method comprising: capturing an optical image to form raw data indicative of the optical image (col. 3, lines 13-14), using values in a look-up table (LUTs 45R, 45G, 45B) to transform the raw data into transformed data indicative of a second image (col. 4, lines 58-61); computing a white color balance of the second image (col. 11, lines

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62-67); and modifying the values in the look-up table (LUTs 45R, 45G, 45B) based on the computed white color balance (col. 11, line 67-col. 12, line 9).

Regarding claim 8, because the method according to the limitations of claim 1 is taught, the apparatus corresponding to the method is also taught. The charge coupled device image sensor 21 corresponds to the image sensor, LUTs 45R, 45G, and 45B correspond to the look-up table, the information processing device 5 corresponds to the white color balance circuit (col. 11, lines 62-63), and the buffer memory 69 corresponds to the second circuit (col. 12, lines 37-41).

Regarding claim 2, Takakura teaches repeating the using, computing, and modifying until the computed white color balance is at an acceptable level (col. 12, line 42-47).

Regarding claim 9, because the method according to the limitations of claim 2 is taught, the apparatus corresponding to the method is also taught.

Regarding claim 3, Takakura teaches repeating the using, computing, and modifying iteratively until the luminance level reaches the black level, (col. 12, lines 42-47), which reads on a predetermined number of iterations.

Regarding claim 10, because the method according to the limitations of claim 3 is taught, the apparatus corresponding to the method is also taught.

Regarding claim 15, Takakura teaches an imaging device, which comprises a camera 3 (col. 3, lines 13-14).

Regarding claim 16, Takakura teaches an article comprising a storage medium (ROM 68) readable by a process-based system (CPU 69) that contains the program for controlling the overall system (col. 7, lines 14-18). Takakura also teaches a method that uses values stored in a look-up table to transform raw data provided by an image sensor into transformed data that

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indicates an image, compute a white color balance of the image, and modify the values in the look-up table based on the computed white color balance. See claim 1.

Regarding claim 17, Takakura teaches an article comprising a storage medium (ROM 68) readable by a process-based system (CPU 69) that contains the program for controlling the overall system (col. 7, lines 14-18). Takakura teaches the repetition of the modification of the look-up table and computation of white color balance until the computed white color balance is at an acceptable level. See claim 2.

Regarding claim 18, Takakura teaches an article comprising a storage medium (ROM 68) readable by a process-based system (CPU 69) that contains the program for controlling the overall system (col. 7, lines 14-18). Takakura teaches the repetition of the modification of the look-up table and computation of white color balance until the computed white color balance is performed a predetermined number of iterations. See claim 3.

3. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakura, U.S. Patent 6,421,083, in view of well-known prior art

Regarding claim 4, Takakura teaches the method according to the limitations of claim 3. See above. Takakura does not teach that the number of iterations depends on whether the capturing is used to capture a still image or video. The examiner takes Official Notice that it is well known in the art to minimize the amount of computation performed when a camera is operating in a video "real-time" mode due to time constraints. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to limit the number of iterations performed when a video image is being captured to minimize the time between

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image capture and image display, but to perform as many iterations as needed when a still image is captured to obtain the highest image quality possible.

Regarding claim 11, because the method according to the limitations of claim 4 is taught, the apparatus corresponding to the method is also taught.

4. Claims 5, 6, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakura, U.S. Patent 6,421,083, in view of Thadani et al, U.S. Patent 6,201,530.

Regarding claim 5, Takakura teaches the method according to the limitations of claim 1. See above. Takakura does not teach the step of modifying the transformed data to compensate for differences in response to the optical image between the image sensor and a human eye. Thadani et al teaches the step of performing color correction on data that has already been subjected to white balance correction to make the color more consistent with standard colors, which reads on modifying the transformed data to compensate for differences in response to the optical image between the image sensor and a human eye (col. 1, lines 39-41, and Fig. 1A). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to append to the method taught by Takakura the practice of performing color correction subsequent to white balance correction taught by Thadani to create a method that first performs white balance correction, and then color correction. One of ordinary skill would have been motivated to make such a modification to achieve an image of higher quality whose appearance closer resembles an object as perceived by the human eye.

Regarding claim 12, because the method according to the limitations of claim 5 is taught, the apparatus corresponding to the method is also taught.

Regarding claim 6, Takakura teaches the step of applying data already subjected to the color correction process to a color space conversion process, which reads on modifying the result of the modification of the transformed data to convert the result into a predetermined color space (Fig. 1A).

Regarding claim 13, because the method according to the limitations of claim 6 is taught, the apparatus corresponding to the method is also taught.

5. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakura, U.S. Patent 6,421,083, in view of Sasaki et al, U.S. Patent 5,202,756.

Regarding claim 7, Takakura teaches the method according to the limitations of claim 1. See above. Takakura does not teach the modifying of raw data to interpolate pixel color before the transformation. Sasaki et al does teach that the colored raw data is interpolated before it is subjected to white balance (col. 7, lines 51-57, col. 9, lines 13-14, 49-51, and Fig. 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the practice of interpolation taught by Sasaki et al into the method taught by Takakura to make a method wherein the raw data is interpolated before it is subjected to further signal processing. One of ordinary skill would have been motivated to make such a modification to improve the resolution of the data before pursuing further signal processing.

Regarding claim 14, because the method according to the limitations of claim 7 is taught, the apparatus corresponding to the method is also taught.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Wu whose telephone number is 703-305-8412. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on 703-305-4863.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

Or faxed to:

703-872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703-306-0377.

DW
May 28, 2003

KA Williams
Kimberly A. Williams
Primary Examiner
Technology Center 2600